

## CLAIMS

We claim:

1        1. A method for generating a data signal using an encoded and framed digital data  
2 stream, the method comprising:

3        receiving a signal to insert a data effect into the data stream;

4        retrieving a data effect having the format of the data stream;

5        detecting a first data stream frame boundary;

6        inserting the data effect into the data stream at the first data stream frame boundary;

7        detecting a second data stream frame boundary; and

8        resuming the data stream at the second data stream frame boundary.

9        2. The method according to claim 1, further comprising determining the format of  
10 the data stream, wherein the retrieved data effect has the same format as that of the data stream.

11        3. The method according to claim 1, wherein the data stream is an audio stream.

12        4. The method according to claim 3, wherein the data effect is an audio effect.

13        5. The method according to claim 4, wherein the audio stream is encoded in AC-3  
14 format.

1           6.       The method according to claim 5, wherein the audio stream is encoded in 2-  
2       channel AC-3 format.

1           7.       The method according to claim 5, wherein the audio stream is encoded in 5.1-  
2       channel AC-3 format.

1           8.       The method according to claim 5, wherein the audio stream is encoded in 7.1-  
2       channel AC-3 format.

1           9.       The method according to claim 4, wherein the audio stream is encoded in MPEG  
2       format.

1           10.      The method according to claim 4, wherein the audio stream is encoded in DTS  
2       format.

1           11.      A method for generating an audio signal using an encoded and framed digital  
2       audio stream, the method comprising:

3           detecting a first audio stream frame boundary;

4           inserting into the audio stream at the first audio stream frame boundary a pre-stored audio  
5       effect having the format of the audio stream;

6           detecting a second audio stream frame boundary; and

7           resuming the audio stream at the second audio stream frame boundary.

1           12. The method according to claim 11, further comprising determining the format of  
2 the audio stream, wherein the pre-stored audio effect has the same format as that of the audio  
3 stream.

1           13. The method according to claim 11, wherein the audio stream is encoded in AC-3  
2 format.

1           14. The method according to claim 13, wherein the audio stream is encoded in 2-  
2 channel AC-3 format.

1           15. The method according to claim 13, wherein the audio stream is encoded in 5.1-  
channel AC-3 format.

1           16. The method according to claim 13, wherein the audio stream is encoded in 7.1-  
2 channel AC-3 format.

1           17. The method according to claim 11, wherein the audio stream is encoded in MPEG  
2 format.

1           18. The method according to claim 11, wherein the audio stream is encoded in DTS  
2 format.

1        19. A method for generating a video signal, the method comprising:  
2            receiving a signal to insert an audio effect into an encoded and framed digital audio  
3            stream;  
4            retrieving an audio effect having the format of the audio stream;  
5            retrieving a video effect corresponding to the audio effect;  
6            inserting the audio effect into the audio stream at a first audio stream frame boundary;  
7            inserting the video effect into a video stream associated with the audio stream; and  
8            resuming the video stream and the audio stream at a second audio stream frame  
9            boundary.

10        20. The method according to claim 19, further comprising determining the format of  
11            the audio stream, wherein the retrieved audio effect has the same format as that of the audio  
12            stream.

1        21. The method according to claim 19, wherein the audio stream is encoded in AC-3  
2            format.

1        22. The method according to claim 19, wherein the audio stream is encoded in MPEG  
2            format.

1           23. The method according to claim 19, wherein the audio stream is encoded in DTS  
2 format.

1           24. A method for maintaining synchronization between a video stream and an  
2 associated encoded and framed digital audio stream, the method comprising:

3           inserting into the audio stream at a first audio stream frame boundary an audio effect  
4 having the format of the audio stream;

5           disposing of frames displaced by the audio effect; and

6           resuming the audio stream at a second audio stream frame boundary.

7           25. The method according to claim 24, wherein the audio stream is encoded in AC-3  
8 format.

9           26. The method according to claim 24, wherein the audio stream is encoded in MPEG  
10 format.

11           27. The method according to claim 24, wherein the audio stream is encoded in DTS  
12 format.

13           28. An apparatus for generating a data signal using an encoded and framed digital  
14 data stream, the apparatus comprising:

15           a multiplexor for inserting a data effect into the data stream; and

4           a processor for detecting frame boundaries in the data stream between which the data  
5   effect is inserted, for retrieving from a memory a data effect having the format of the data  
6   stream, and for transmitting the formatted data effect to the multiplexor.

1           29.    The apparatus according to claim 28, wherein the processor determines the format  
2   of the data stream.

1           30.    The apparatus according to claim 28, wherein the data effects are stored in a  
2   plurality of formats.

31.    The apparatus according to claim 28, wherein the data stream is an audio stream.

32.    The apparatus according to claim 31, wherein the data effect is an audio effect.

1           33.    The apparatus according to claim 32, wherein the audio stream is encoded in AC-  
2   3 format.

1           34.    The apparatus according to claim 33, wherein the audio stream is encoded in 2-  
2   channel AC-3 format.

1           35.    The apparatus according to claim 33, wherein the audio stream is encoded in 5.1-  
2   channel AC-3 format.

1       36.     The apparatus according to claim 33, wherein the audio stream is encoded in 7.1-  
2     channel AC-3 format.

1       37.     The apparatus according to claim 32, wherein the audio stream is encoded in  
2     MPEG format.

1       38.     The apparatus according to claim 32, wherein the audio stream is encoded in DTS  
2     format.